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supplemental to the angle ABC or $C'B'A'$, B' being the middle point of AC ; hence T lies on the circle through A' , B' , C' , that is to say, on the nine-point circle of the triangle ABC ."

In *The Mathematician*, vol. 2, pp. 289–290, July 1847, Fenwick discussed the nine-point conic¹ which may be defined as follows: Given a triangle ABC and a point P in its plane, a conic can be drawn through the following nine points: (1) The middle points of the sides of the triangle; (2) the middle points of the lines joining P to the vertices of the triangle; (3) the points where these last named lines cut the sides of the triangle. Fenwick proved that this conic is the locus of the center of the conics passing through the four points A , B , C , and P ; when P is the orthocenter of the triangle the conic is a rectangular hyperbola. Brianchon and Poncelet proved (*Annales de mathématiques pures et appliquées* (Gergonne), tome 11, pp. 205, 213, January, 1821) that every rectangular hyperbola through A , B , and C must also pass through the orthocenter and that the locus of the centers of such hyperbolas is the nine-point circle of the triangle. The asymptotes for any one of the hyperbolas are the pair of Wallace lines corresponding to the ends of a certain diameter of the circumscribed circle. (Steiner, *l.c.*, cf. also Weill, *Journal de mathématiques spéciales*, 1884, p. 16.) When this diameter passes through the center of the inscribed circle we have that the corresponding Wallace lines intersect at the point of contact of the nine-point and inscribed circles (Neuberg, *Mathesis*, 1893, p. 86). The equilateral hyperbola with this point as center has been called the *hyperbola of Feuerbach* (Neuberg, *l.c.*) since the theorem that the nine-point circle of a triangle is tangent to the inscribed and the three escribed circle was enunciated and proved by Feuerbach in a publication of 1822. I have not seen a reference to the three similar hyperbolas corresponding to diameters through the centers of the escribed circles.

Corresponding to the diameter through the orthocenter (that is, Euler's line) we have the *hyperbola of Jeřábek* (Jeřábek, *Mathesis*, 1888, pp. 81–84), and to the diameter through the Lemoine point,² we have the hyperbola called by Neuberg (*Journal de mathématiques spéciales*, 1886, p. 73) *hyperbola of Kiepert* (*Nouvelles annales de mathématique*, 1869, pp. 40–42.).

A more general form of Dr. Soursley's problem was given by Weill (*Journal de mathématiques spéciales*, 1884, p. 13): If m and m' are the Wallace lines of any two points M and M' on the circumcircle, then the angles between m and m' are equal to one or other of the angles under which the line segment MM' is seen from a point of the circumcircle.

Also solved by P. J. DA CUNHA, A. PELLETIER, and the Proposer.

NOTES AND NEWS.

EDITED BY E. J. MOULTON, Northwestern University, Evanston, Ill.

Dr. W. H. WILSON, of the Massachusetts Institute of Technology, has been instructor in mathematics at the University of Iowa since last September.

At the University of Oklahoma Associate Professor E. P. R. DUVAL resigned, his resignation to become effective at the end of the first semester, and is engaged in fruit growing at Springdale, Arkansas. Mr. E. E. COWAN has been appointed instructor in mathematics.

At Yale University Assistant Professor W. R. LONGLEY has been promoted to a full professorship, and Instructor J. K. WHITTEMORE to an assistant professorship of mathematics.

¹ This name seems to be due to Beltrami, 1863, "Intorno alle coniche dei nove punti e ad alcune questioni che ne dipendone," *Memorie dell'accademia delle scienze dell' Istituto di Bologna*, serie 2, vol. 2 (1862), pp. 361–395; also *Opere matematiche di Eugenio Beltrami*, vol. 1, 1902, pp. 45–72.

² This is the point of intersection of the symmedians of a triangle, that is, the lines through the vertices of the triangle symmetric to the medians through those vertices, with respect to the corresponding angle bisectors.

Assistant Professor A. E. BABBITT, of the University of Nebraska, has resigned his position in the mathematics department, and has accepted the position as secretary and actuary with the Lamar Insurance Company of Jackson, Miss.

At the University of Texas are the following part-time instructors in mathematics this year in the school of pure mathematics: Messrs. J. E. BURNAM, H. H. HAMMER, CLAUDE BAILEY, and C. H. ROBERSON; Mr. C. M. CLEVELAND was appointed instructor in mathematics in the school of applied mathematics.

At the University of Kansas, Assistant Professor SOLOMON LEFSCHETZ has been advanced to an associate professorship.

Mr. P. C. PORTER is dean of the college and professor of mathematics in Baylor College for Women, Belton, Texas.

P. ERRE ROBINSON, now a graduate student at the University of Chicago, has accepted an instructorship in mathematics at the University of Chicago High School.

Dr. I. A. BARNETT, now Benjamin Peirce instructor at Harvard University, will go to University of Illinois as instructor in mathematics next year.

Mr. C. C. WYLIE who, aside from war work with the Technical Staff of the Ordnance Department, has for six years been an assistant in the U. S. Naval Observatory, has taken a position in the department of astronomy in the University of Illinois.

The official title of Professor E. R. HEDRICK, of the University of Missouri, has been changed from professor of mathematics to professor of mathematics and of the teaching of mathematics.

At Washington University, Miss JESSICA M. YOUNG, instructor in Astronomy at Northwestern University during the first semester, has been instructor in mathematics and astronomy since the beginning of the second semester; Mrs. PEARL C. MILLER has been an assistant in the mathematics department since the middle of last December.

Professor E. W. BROWN, of Yale University, whose term of office as a representative of the American Mathematical Society on the Division of Physical Sciences in the National Research Council would have expired this month, resigned in December. The Council of the Society appointed as his successor Professor OSWALD VEBLER of Princeton University.

The government of Servia has created a university of Lioubliana (formerly Laibach) and Professors J. PLEMELJ, of the University of Czernowitz (Roumania), and R. ZOUPANTCHITCH (French form of Suppantchitch), honorary docent of the polytechnic school at Vienna, have been appointed professors of mathematics.

At the University of Clermont Dr. G. GIRAUD has been appointed chargé de cours for differential and integral calculus in place of Professor A. C. E. PELLET who has retired from active teaching. At the University of Poitiers Dr. RENÉ GARNIER has been appointed chargé de cours for rational and applied mechanics in place of Professor M. FRÉCHET now at the University of Strassburg (1919, 371).

The following paragraph is from *Science*, February 13: "Boston University has concluded an arrangement for an exchange of professorships in mathematics for the college year 1920-1921 with Tsing Hua College, Peking, China. Professor R. E. Bruce, chairman of the department in Boston University, will exchange with Professor A. H. HEINZ, of Tsing Hua. Professor HEINZ, head of the department of mathematics, is a graduate of the University of Missouri and has been at Tsing Hua nine years. This college is under the control of the Chinese government and was founded with part of the returned Boxer Indemnity. Professor Bruce will sail from the Pacific coast in April. Professor Heinz will reach this country in time to begin his work at Boston University at the opening of the college in September."

Dr. ADOLF HURWITZ, professor of mathematics in the federal polytechnic school at Zurich, since 1892, died in November 1919, aged sixty years.

Nature for December 25, 1919, notes:

"The last day of this year marks the bicentenary of the death of JOHN FLAMSTEED, first Astronomer Royal of England, and the rector of the parish of Burstow, Surrey, where he is buried, uncommemorated, we understand, by an monument. Flamsteed was born four years after Newton, and was a native of Derbyshire, being the son of a well-to-do maltster. Though prevented by illness from attending a university, he was devoted to mathematical studies, and in 1671 sent a paper to the Royal Society. Three years later he published his 'Ephemerides,' a copy of which, being presented to Charles II. by Sir Jonas Moore, led to Flamsteed being appointed on March 4, 1675, 'our Astronomical Observer' at a salary of 100£ per annum, his duty being 'forthwith to apply himself with the most exact care and diligence to the rectifying the tables of the motions of the heavens and the places of the fixed stars, so as to find out the so much desired longitude of places for the perfecting the art of navigation.' The observatory at Greenwich, constructed partly of brick from old Tilbury Fort and of timber and lead from the Tower of London, was designed by Wren and built at a cost of 520£, the money being derived from the sale of spoilt gun-powder. The struggles and disputes, the dogged perseverance, and the memorable achievements of Flamsteed have their place in the history of astronomy, but it may safely be said that never has king or Government made a better investment than when Greenwich was built and Flamsteed made passing rich on 100£ a year."

We have already noted (1920, 45) the formation of a committee, or "Provisional International Mathematical Union" charged with the duty of consulting mathematicians and circulating statutes in different countries with a view to organizing an International Mathematical Union. C. J. de la VALLÉE POUSSIN was appointed the president of this committee, W. H. YOUNG the vice-president, and LAMB, PICARD, and VOLTERRA honorary presidents; there were four "secretaries" representing Belgium, France, Roumania and Italy. The Italian secretary, Professor Reina, died last November (1920, 143). In December, 1919, five months after the Brussels Congress, American mathematicians learned for the

first time of the appointment of such a provisional committee. On December 30 the Council of the American Mathematical Society appointed Professor L. E. DICKSON chairman of a committee to deal with communications coming from the provisional union. It has developed, however, that at an earlier date the union (with its secretaries representing Belgium, France and Roumania) called for an International Mathematical Congress (so-called), at the University of Strasbourg, the same to commence September 22, 1920. According to information recently received it would appear as if English mathematicians were with Americans equally ignored in the decision with regard to the desirability of a Congress at the time stated.

The following reports of Summer Sessions in 1920 have been received.

University of Chicago, First Term, June 1–July 28; Second Term, July 29–September 3. By Professor E. H. MOORE: Hermitian matrices of positive type in general analysis, 4 hours, Limits and Series, 4 hours, first term only. By Professor G. A. BLISS: Functions of a complex variable, 4 hours; Integral calculus, 5 hours. By Professor L. E. DICKSON: Theory of matrices and bilinear and quadratic forms, 4 hours; Theory of numbers, 4 hours. By Professor M. W. HASKELL: Projective geometry, 4 hours; Topics in analytic geometry, 5 hours. By Professor J. W. A. YOUNG: Theory of equations, 4 hours; Differential calculus, 5 hours. By Professor E. W. CHITTENDEN: Differential equations, 4 hours; College Algebra, 5 hours. By Professor W. D. MACMILLAN: Celestial mechanics II, 4 hours; Descriptive astronomy, 5 hours. Courses in plane analytic geometry and trigonometry will also be given.

University of Colorado, First term, June 14–July 21; second term, July 22–August 28. By Professor ABRAHAM COHEN, Johns Hopkins University: Teachers course in mathematics; Differential equations. By Professor G. H. LIGHT: Review course in mathematics; Calculus of variations. By Dr. GUY W. SMITH, University of Kentucky: Trigonometry; Plane analytical geometry; Differential calculus. The following advanced courses will be given by Professors COHEN and LIGHT: Theory of algebraic equations; Definite integrals; Theory of a complex variable; Elliptic integrals and functions; An introductory course in analysis; Differential geometry.

Columbia University, July 6–August 13. Undergraduate courses in elementary algebra, plane geometry, logarithms and trigonometry, solid geometry, college algebra, analytical geometry and calculus will be given by various members of the staff. Graduate courses are offered as follows: By Professor E. KASNER: Fundamental concepts of modern mathematics; Geometric transformations and groups. By Professor W. B. FITE: Differential equations. By Dr. G. E. PFEIFFER: Introduction to higher algebra. In the School of Education, Teachers College, several courses will be given by Professor UPTON and Mr. BRECKENRIDGE for teachers of mathematics in secondary schools. Professor SMITH will lecture on the history of mathematics and give a practicum in the teaching of mathematics.

Harvard University, July 6–August 14. By Professor C. L. BOUTON: Trigonometry; Analytic geometry. By Professor G. D. BIRKHOFF: Differential calculus; Integral calculus. These courses will be accepted as half-courses towards the degrees of A.B., A.A., and S.B.

University of Illinois, June 21–August 14, By Professor A. R. CRATHORNE: Mathematical theory of statistics; Differential equations. By Professor A. J. KEMPNER: Functions of a complex variable; Advanced algebra. By Dr. E. B. LYTLE: Teachers' course; Plane trigonometry. By Dr. J. R. KLINE: Differential calculus. By Mr. W. E. EDINGTON: Integral calculus; College algebra. By Mr. PETTIT: Trigonometry; College algebra.

University of Iowa, First Term, June 16–July 27. By Professor H. L. RIETZ: Teachers' course; Solid geometry. By Dr. J. W. CAMPBELL: Trigonometry; Analytic geometry; Differential equations. By Dr. W. H. WILSON: College algebra; Calculus; Reading course. By Mr. R. E. GLEASON: Solid geometry. Second Term, July 28–August 31. By Professor J. F. REILLY: Analytic geometry; Calculus; Reading course. By Mr. R. E. GLEASON: College algebra; Reading course. The courses are five hours per week in class through the sessions. When transformed into hours of the ordinary academic year the credit for each course taken during the first session is two semester hours and for the second session five-sixths of this amount.

University of Kansas, June 10–July 31. By Professor C. H. ASHTON: Mechanics, 3 semester hrs. credit; Algebra, 3 hrs. By Professor S. LEFSCHETZ: Theory of numbers, 3 hrs.; Analytic geometry, 2 hrs. By Professor J. J. WHEELER: Calculus, 3 hrs.; Solid geometry, 3 hrs. Second session, July 22–August 19. By Professor E. B. STOUTER: Mathematical theory of investments, 2 hrs.; Trigonometry, 2 hrs.

University of Michigan, June 28–August 20. By Professor BEMAN: Differential equations, 2 hours. By Professor W. B. FORD: Advanced algebra; Advanced calculus, 2 hours; Theory of potential, 2 hours. By Professor P. FIELD: Vector analysis, 2 hours. By Professor L. C. KARPINSKI: History of mathematics. By Professor J. W. Bradshaw: Projective geometry, 2 hours. By Professor T. R. RUNNING: Graphical methods, 2 hours. By Professor W. B. CARVER: Introduction to the mathematical theory of interest, 2 hours. By Dr. R. B. ROBBINS: Mathematical theory of statistics, 2 hours.

Northwestern University, June 28–August 20. By Professor D. R. CURTISS: College algebra, Differential calculus. By Professor C. E. WILDER: Trigonometry; Analytical geometry. Each course bears credit of 3 semester hours.

University of Oklahoma, June 9–August 3. By Professor REAVES: Analytic geometry, 5 hrs.; Advanced analytic geometry, 3 hrs. By Professor GOSSARD: Intermediate algebra, 3 hrs.; The teaching of secondary mathematics, 2 hrs.; Integral Calculus, 3 hrs. By Professor N. ALTSHILLER-COURT: College algebra, 3 hrs.; Plane trigonometry, 3 hrs. Projective geometry, 3 hrs. By Professor E. D. MEACHAM: Differential calculus, 3 hrs.; Solid analytic geometry, 3 hrs.

University of Pennsylvania, July 5–August 14. Courses in Plane geometry;

Differential calculus; Integral calculus; Solid geometry; Plane trigonometry; Intermediate algebra; College algebra; Analytic geometry; Projective geometry; Theory of statistics; will be offered by the following staff: Professor G. H. HALLETT, Assistant Professor H. H. MITCHELL, Assistant Professor S. P. SHUGERT and Mr. THOMAS.

Queen's University, July 5–August 13. Freshman and Sophomore Mathematics will be given by the following staff: Professor J. MATHESON; Professor D. BUCHANAN; Professor C. F. GUMMER; Messrs. N. MILLER, H. VAN PATER and F. M. WOOD; and Miss GRACE H. JEFFREY.

THE WORK OF THE NATIONAL COMMITTEE ON MATHEMATICAL REQUIREMENTS,
MARCH 1920. (Cf. 1920, 145–146.)

At the last meeting of the General Education Board in New York on February 28th, the sum of \$25,000, was appropriated for the use of the National Committee on Mathematical Requirements to continue its work for the year beginning July 1, 1920.

The preliminary report on "The Reorganization of the First Courses in Secondary School Mathematics" published for the Committee by the U. S. Bureau of Education has been distributed widely. Copies of the report have gone to all the state departments of education, to all county and district superintendents in the United States and to all city superintendents in cities and towns of over 2500 population. It has been sent to all the normal schools in the country, to some 1500 libraries and to almost 300 periodicals and newspapers. In addition it has been sent to about 4500 individuals, the names and addresses of which were furnished the Bureau of Education by the National Committee. This list of individuals consists chiefly of teachers of mathematics and principals of schools throughout the country. Additions to this mailing list to secure copies of the future reports of the Committee can still be made. Individuals interested in securing these reports should send their names and addresses to the Chairman of the Committee (J. W. Young, Hanover, N. H.).

A subcommittee consisting of Professor C. N. Moore of the University of Cincinnati, Mr. W. F. Downey of Boston and Miss Eula Weeks of St. Louis has been appointed to prepare a report for the Committee on Elective Courses in Mathematics for Secondary Schools. Any material or suggestions for this report may be sent directly to any member of the subcommittee.

The recent work of the National Committee had a place on the program of the organization meeting of the National Council of Teachers of Mathematics held in Cleveland on February 24, in connection with the meeting of the Department of Superintendence of the National Education Association. The meeting for the organization of the National Council was enthusiastically attended. A constitution was adopted and officers and an executive committee elected. Mr. J. A. Foberg, of the National Committee on Mathematical Requirements, was elected Secretary-Treasurer of the National Council.